

**APPLICATION  
FOR  
UNITED STATES LETTERS PATENT**

**Title:** CONSUMER PYROTECHNICS SUPPORT APPARATUS

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## CONSUMER PYROTECHNICS SUPPORT APPARATUS

### Field of the Invention:

The present invention relates to pyrotechnic devices and, more particularly, to a stable apparatus for supporting consumer-type ground-based pyrotechnics, such as mortars, projectiles, fountains, and other pyrotechnic devices, commonly referred to as fireworks, so that the fireworks may be used in a manner which helps minimize the potential for bodily harm.

### BACKGROUND OF THE INVENTION

Pyrotechnics, or fireworks as they are commonly called, were discovered by the Chinese in second century BC and have been used ever since for everything from warding off evil spirits to fighting wars. In the United States, fireworks were used extensively on July 4, 1777 as a way to mark the signing of the Declaration of Independence one year earlier. Ever since, Americans have used fireworks to celebrate not only their independence but a variety of other noteworthy

events (e.g., elections, parades, parties, holidays, commemorations, et cetera). In the year 2000 alone, Americans consumed 152 million pounds of fireworks, according to the U.S. International Trade Commission. Unfortunately, in that same year fireworks devices were involved in 10 deaths and an estimated 11,000 injuries requiring professional medical care - with children under 15 accounting for almost half of all fireworks-related injuries, according to the U.S. Consumer Product Safety Commission, 2000 Fireworks Annual Report.

One of the more dangerous events that can occur is when a firework that has been stationed on the ground is activated and accidentally tipped over. Imagine the horror of witnessing a fireworks tube tipping over at the very instant it shoots out a hot mortar directly into a crowd of onlookers! This actually occurred when a "a 6-inch fountain that shot colored fireballs injured a 4-year-old girl. When the fountain tipped over, the victim was struck in the chest by a fireball. She sustained 2nd and 3rd degree burns to her chest and neck. She was hospitalized for three weeks for burn treatment and skin grafts" (Consumer Product Safety

Commission).

In order to stabilize ground-based fireworks and help prevent this type of accident from happening, many consumer-type fireworks (e.g., fountains) are manufactured with a wide base or are equipped with a plastic foundation glued to the bottom of the cardboard launching tube. Despite this, year after year U.S. injury statistics prove that current foundation efforts are not enough. People clearly need a simple and robust method for more safely securing ground-based consumer fireworks.

Other than homemade solutions, research has not been able to uncover any readily available consumer solutions for stabilizing ground-based fireworks.

Homemade solutions for securing ground-based fireworks are feasible but not very practical. Among other things, a homemade solution is inconvenient to build, inconsistent from one person to the next, may not be usable or accessible to all citizens, and has no mass viability. Homemade solutions are, by their very nature, largely untested craft-produced objects that can be implemented only on a case-by-case basis

and in limited situations.

It is therefore an object of the invention to provide a reusable stable foundation and holder for ground-based consumer fireworks (e.g., mortars and fountains).

It is another object of the invention to provide a holder for ground-based consumer fireworks that is resistant to tipping over.

It is further an object of the invention to securely hold or grip ground-based fireworks using a series of individual resilient flexible cantilever tines.

It is further an object of the invention to securely hold or grip ground-based consumer fireworks in a vertical and upright position.

It is another object of the invention to hold various disparate shapes (e.g., round, square, et cetera) and sizes of ground-based consumer fireworks.

It is further an object of the invention for the user to be able to insert, secure, and remove ground-based fireworks with a minimal amount of skill, strength, time, and dexterity.

#### SUMMARY OF THE INVENTION

In accordance with the present invention, there is provided a reusable fireworks support device which securely holds consumer ground-based fireworks (e.g., fountains, mortars, et cetera) in a vertical and upright position. Using a wide base that is resistant to tipping over, this multi-legged apparatus arches to form a platform consisting of a series of resilient flexible cantilever tines or "fingers" with an aperture serving as the primary insertion point for the pyrotechnics.

#### BRIEF DESCRIPTION OF THE DRAWINGS

A complete understanding of the present invention may be obtained by reference to the accompanying drawings, when

considered in conjunction with the subsequent, detailed description, in which:

Figure 1 is a perspective top down view of a fireworks holder in accordance with the invention;

Figure 2 is a side view of an alternative embodiment of Figure 1;

Figure 3 is a perspective top down view of an alternative circular embodiment of the fireworks holder; and

Figure 4 is a side view of an alternative embodiment of Figure 4.

For purposes of clarity and brevity, like elements and components will bear the same designations and numbering throughout the FIGURES.

#### DESCRIPTION OF THE PREFERRED EMBODIMENT

Figure 1 is a top down view of a reusable fireworks support device 10 in accordance with the invention. Formed from metal or other suitable non-flammable material that is resistant to heat and flame, the fireworks support device 10 is capable of supporting consumer-type ground-based fireworks of various size and shape in a vertical and upright fashion; thus limiting the opportunity for them to accidentally tip over.

A cantilever tine platform 11 forms the dais for a positioning aperture 12. The positioning aperture 12 is an opening in the cantilever tine platform 11 whose underside serves as the insertion point for pyrotechnics. Located at the apex of the cantilever tine platform 11 and round in this example, the positioning aperture 12 could be offset and square or a variety of other shapes and locations so as to accommodate the supported firework, not shown.

A series of uniform independent finger tines 15 are disposed on the free forming cantilever tine platform 11 to completely surround a variety of consumer-type pyrotechnic



devices, not shown, with gripping finger tines 15. Operating independently from each other, the flexible finger tines 15 are able to grip fireworks of various size and shape, yet resilient enough to return to their resting position when no longer in use. The flexibility and resiliency of the cantilever tine platform 11 depends upon the length of each of the finger tines 15, their design, and the material used. Mechanical calculations and trial and error are used to find a suitable configuration of finger tines 15 that supports the desired firework size(s) and shape(s) while also providing for the desired tine flexibility and resiliency.

In this triangle based configuration, the foundation of the fireworks support device 10 is created by the use of three, convex shaped support legs 13 shown in Figure 1 that are sufficiently weighted and wider than the cantilever tine platform 11 they are attached to. However, as long as the fireworks support device 10 is stable, resistant to tipping over, and provides for the cantilever tine platform 11, it is entirely possible that other foundational configurations could be used. For example, the circular fireworks support device 14 shown in Figure 3 is a round alternate embodiment

to the triangle shaped fireworks support device 10 in Figure 1, yet retains the same general features and same function. Figure 4 is a side view of a circular fireworks support device 14 and shows two of the three support legs 13.

In operation, referring now again to Figure 2, the fireworks support device 10 accepts downward reasonable arm-strength pressure so as to receive a pyrotechnic, not shown, which may be stationed vertically on the ground, through the underbelly of the cantilever tine platform 11 at the exact location of the positioning aperture 12. As force is applied to the top side of the fireworks support device 10, the pyrotechnic being received juts up out and through the positioning aperture 12 with the flexible cantilever tine platform 11 temporarily flexing up, out, and away from the firework, yet remaining resilient enough to retain a firm grip on the outside wall of the pyrotechnic device. The cantilever tine platform 11 is formed in a uniform pattern so as to completely surround the entire pyrotechnic device. The finger tines 15 operate independently from each other so as to accommodate different sized and geometrically shaped fireworks.

To properly secure a firework, the fireworks support device 10 is pushed all the way down over the pyrotechnic it is supporting so that the support legs 13 are horizontally aligned with the firework base, thus creating a multi-legged foundation. In this manner, the support legs 13 and pyrotechnic work hand-in-hand to create a stable foundation that is more resistant to tipping over than if the firework were set on the ground by itself. By combining this stable base with the finger tines 15 of the cantilever tine platform 11 securely gripping the pyrotechnic, the firework can now be more safely used as it will be resistant to accidentally tipping over during operation.

Once the firework has been used, it can easily be removed from the fireworks support device 10 by gently pulling the firework in the opposite direction it was originally inserted. Once the pyrotechnic has been removed, each of the finger tines 15 of the cantilever tine platform 11 returns to their resting position, once again ready to support another firework in reuse.

Since other modifications and changes varied to fit particular operating requirements and environments will be apparent to those skilled in the art, the invention is not considered limited to the example chosen for purposes of disclosure, and covers all changes and modifications which do not constitute departures from the true spirit and scope of this invention.

Having thus described the invention, what is desired to be protected by Letters Patent is presented in the subsequently appended claims.

What is claimed is: